IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1-13. (Cancelled)

14. (Withdrawn) A combination flame and corona head for enhancing surface bonding properties of a substrate comprising:

a corona electrode for generating a corona by electrically charging an area between said electrode and a complementary electrode; and

at least one opening in the corona electrode for providing a combustible gas in the area of the corona,

said corona electrode facilitating generation of a corona and a flame within a common area.

15. (Withdrawn) The combination flame and corona head according to claim 14 wherein

the substrate is located between said corona electrode and the complementary electrode, and

the substrate is simultaneously treated with corona ions from the corona and combustion ions upon ignition of the combustible gas

thereby enhancing the surface bonding properties of the substrate.

16. (Withdrawn) The combination flame and coronal head according to claim 15 wherein

the complementary electrode is cylindrical,

the combination head generates the corona and flame in the common area corresponding to an arc portion of the cylindrical complementary electrode, and

said corona electrode has a curved surface corresponding to the arc portion of the cylindrical complementary electrode.

17. (Withdrawn) The combination flame and corona head according to claim 16 wherein the combination head is a component of a device for enhancing surface bonding properties of a plurality of cylindrical substrates and the device further comprises

a plurality of regularly spaced cylindrical complementary electrodes moving in a planar direction relative to said combination flame and corona head wherein each of the plurality of substrates is cylindrical and removably attaches to each of the plurality of corresponding complementary cylindrical electrodes; and

a controller for pausing the planar movement of each of the plurality cylindrical complementary electrodes at a predetermined position relative to said combination head thereby providing a predetermined gap of substantially constant distance between the curved electrode of the combination head and each cylindrical complementary electrode while paused in close proximity, while providing for the planar movement of the cylindrical complementary electrodes relative the combination head without movement of the combination head.

18. (Currently Amended) A treatment head ~~for generating a corona~~ comprising:

a corona head with a corona electrode for generating an ion field in response to a corona discharge when electrified and placed in proximity with a complementary electrode, the ion field for treating ~~the~~a surface of a substrate located between the corona electrode and complementary electrode; ~~and~~

~~an~~at least one orifice for generating a~~n air~~gas jet for cooling the substrate while being exposed to the ion field when the surface of the substrate is treated; and

a flame head with at least one orifice for generating a combustible gas for treating the surface of the substrate with a flame;

19. (Withdrawn) The enhanced head according to claim 18 wherein

said corona electrode has two parallel sides; and

said orifice includes a first and second opening for generating first and second air jets in substantial proximity with the two parallel sides wherein the ion field substantially contained within the first and second air jets.

20. (Withdrawn) The enhance head according to claim 18 wherein

said corona electrode has a leading edge and a trailing edge,

the substrate moves through the generated ion field by entering at the leading edge and exiting at the trailing edge and

said orifice includes an opening for generating a trailing edge air jet in substantial proximity with trailing edge of said corona electrode wherein the ion field is substantially contained within the trailing edge of the air jet.

21. (Withdrawn) The enhanced head according to claim 20 further comprising

a flame orifice located in substantial proximity with the leading edge of said corona electrode for generating a flame for treating the surface of the substrate.

22. (Withdrawn) The enhanced head according to claim 20 wherein the ion field heats the substrate and the air jet further cools the substrate upon exiting the ion field.

23. (Withdrawn) The enhanced head according to claim 22 further comprising an air cooler connected to the enhanced head for the air cooling air prior to passing through the opening of said orifice.

24. (New) The treatment head according to claim 18, wherein the electrode is disposed on an insulator, thereby electrically isolating the corona electrode from the treatment head.

25. (New) The treatment head according to claim 18, wherein the electrode includes a plurality of grooves formed thereon to increase a given surface area of the electrode.

26. (New) The treatment head according to claim 25, wherein the at least one orifice is formed in a center of the electrode and the gas is air.

27. (New) The treatment head according to claim 18, further comprising:

a leading edge electrically coupled to the corona electrode to increase a surface area of the corona electrode and to act as a primer for sparking a generation of an ion field for the corona treatment of the surface of the substrate.

28. (New) The treatment head according to claim 18, wherein the substrate is a cup and the complementary electrode is cylindrical shape and adapted to hold the cup, and wherein the electrode further comprises:

a curved surface to correspond to the cylindrical shape of the complementary electrode so as to provide a substantially constant gap therebetween.

29. (New) The treatment head according to claim 28, wherein the electrode includes a plurality of grooves formed thereon to increase a given surface area of the electrode.

30. (New) The treatment head according to claim 29, wherein the at least one orifice is formed in a center of the electrode and the gas is air.

31. (New) The treatment head according to claim 28, further comprising:

a leading edge electrically coupled to the corona electrode to increase a surface area of the corona electrode and to act as a primer for sparking a generation of an ion field for the corona treatment of the surface of the substrate.

32. (New) The treatment head according to claim 28, further comprising:

a gas supply tube that is communicatively coupled to the at least one orifice of the corona electrode and wherein the gas supply tube holds the electrode adjacent to a side wall of the cup on the cylindrical shaped complementary electrode, thereby treating the side wall of the cup with the ion field; and

wherein the flame head is positioned adjacent to a side wall of the cup for treating the side wall of the cup the flame.

33. (New) The treatment head according to claim 32, wherein the side wall of the cup is treated by the flame followed by a treatment by the ion field.

34. (New) The treatment head according to claim 32, wherein the side wall of the cup is treated by the ion field followed by a treatment by the flame.